

THE SMART METER DEPLOYMENT HANDBOOK

90
60
30



Get a handle on enhancing confidence in smart meters in just 90 days.

About the Handbook

FIELD TESTED

Consumer confidence is a persistent state of mind or attitude held by a customer. It consists of trust or belief in the reliability of a person, process, or system, such that the consumer acts based on trust in performance.

In 2010, NV Energy and U.S. Department of Energy agreed to assess consumer confidence in smart metering systems. Together, they funded a project to explore methods for enhancing consumer confidence based upon the work of utilities who went before them. This Handbook is the result of this project.

The consumer confidence story began in 2006 when San Diego Gas & Electric (SDG&E) set the goal of “a neutral-to-positive customer experience” for its smart meter deployment. The reason for this goal was clear. Forty-five percent of SDG&E’s smart metering business case was dependent upon future customer

participation in demand response. If customers’ first experience with smart meters was negative, then their trust in the smart meter system would be low. And if trust was low, then the challenge of motivating customers to

participate in demand response in the future would be daunting. With a strong plan and expert execution, SDG&E installed 1.4 million meters and customer satisfaction surveys showed they achieved their goal of “a neutral-to-positive customer experience.”

Based upon the success experienced by SDG&E in its smart meter deployment, NV Energy adopted a similar approach as the foundation for its own smart meter deployment, with some enhancements. A lot had changed since 2006. Organized customer activism in Northern California, Texas, Maine, and elsewhere in the world regarding smart meter system accuracy, security, privacy, health, and value had made smart metering front page news, and not in a good way. NV Energy recognized that the lack of consumer confidence in smart metering systems was a risk, not only for a successful deployment, but for the longer term innovations and benefits that smart metering systems offer. Thus, it enhanced SDG&E’s approach by formally establishing a process that aims to build consumer confidence.

The industry has now learned smart meter system deployments are not the routine “technology upgrade” that utilities have performed for the past 100 years. The phrase known to every

This Handbook is your guide to increasing consumer confidence in your smart meter deployment using an approach that works.

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utility field technician, “we have the legal right to repair, replace, and maintain OUR equipment,” while true, does not establish a foundation for a new type of customer relationship. “Stealth” smart meter deployments would be very risky in today’s environment. SDG&E’s goal was a “neutral-to-positive customer experience” that would set the foundation to achieve future demand response goals. NV Energy’s goal is to shape customer attitudes in such a way that customers ultimately experience “energy ownership.” Both goals depend upon a successful smart meter deployment. The goal for your smart meter program likely does as well.

This Handbook is your “first edition” recipe book for developing a smart meter deployment approach that works. The approaches and ideas found in this Handbook have been developed and tested at three different utilities: SDG&E, ComEd, and NV Energy. Now, as you would expect, each of these utilities adjusted the recipes a bit to meet their unique situation. Yet, all three have met the “neutral-to-positive customer experience” goal with more than 2 million customers, and one (SDG&E) was referred to as “the gold standard” in California Public Utilities Commission hearings. Future editions of the Handbook will enhance and adjust the recipes, and we invite you to contribute your adjustments or new recipes to future editions.

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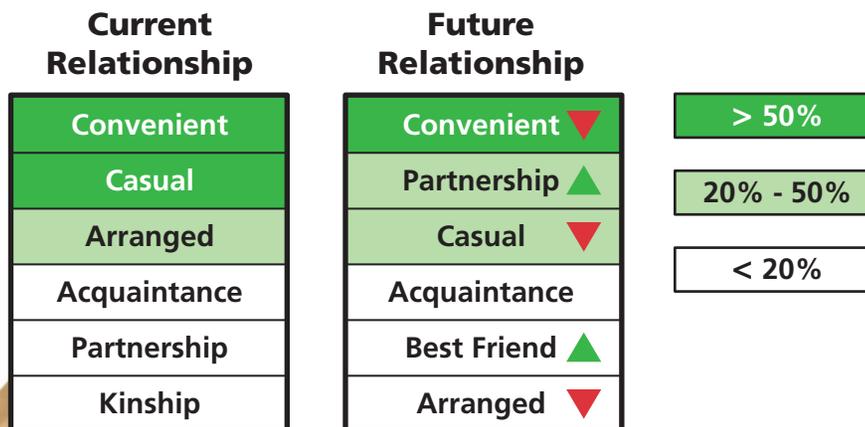
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Why All the Fuss about Customers?

Currently, the relationship customers have with their utility can be best described as a *marriage of convenience*, a long-term relationship that one maintains due to availability rather than choice. When we surveyed customers about their desires for a future relationship with their utility, they pointed to a relationship that was voluntary and had a higher degree of trust. Partnership and friendship best describe this type of relationship.



▲ Statistically Significant Increase
▼ Statistically Significant Decrease

A survey of 763 utility customers indicated a desire to move toward a utility relationship that was more voluntary and trustworthy.

Given this desired relationship and our discussions with utility leaders throughout the country, these strategic themes have emerged that suggest why utilities need to be fussy about moving toward enhancing the customer relationship.

1. Achieving regulatory goals

To collect regulatory incentives or avoid regulatory fines associated with meeting energy efficiency and demand response goals, utilities must foster a positive customer relationship that drives customer participation in programs.

2. Reducing the cost to serve

Greater levels of customer trust are needed to transition more and more customers to self-service technologies.

3. Competitive threats and opportunities

Retail electric suppliers, distributed generation, and the potential shift of public interest funds for energy efficiency and demand response to third parties require utilities to have a greater appreciation for customers.

4. New revenue opportunities

Since the smart grid provides utilities the potential to offer customers innovative products, services, and programs for a fee, utilities must ensure its relationship with customers has the potential to deliver new revenues.

Consumer Confidence

As introduced at the beginning of this Handbook, *consumer confidence* is a persistent state of mind or attitude held by a customer. It consists of trust or belief in the reliability of a person, process, or system, such that the consumer acts based on trust in performance. Trust is the critical attribute for relationships that reflect partnership and friendship.

A smart metering system will touch all of your customers. The replacement of the meter and the resulting brief outage a customer experiences is a clear and noticeable signal that the relationship is about to change – ideally for the better. To reinforce that signal, you must establish customer confidence in five specific areas:

1. **Safety.** Safety means that the smart metering system meets government and regulatory standards for safe operation.
2. **Security.** Security means that the smart metering system is protected from being compromised by outside influences.
3. **Privacy.** Privacy means that the data managed by the smart metering system is kept private unless authorized otherwise by the customer.

4. **Accuracy.** Accuracy means that the smart metering system, from the meter to the bill, meets or exceeds established regulatory standards.

5. **Value.** Value means that the smart metering system offers customers value, in terms of information, conservation, or savings.



Establishing confidence is not easy. It is a time consuming process that needs to be woven into all of your customer touchpoints. So let's focus our attention on the touchpoint that starts the ball rolling: the installation of smart meters.

Consumer confidence is the foundation for a customer relationship that moves toward partnership and friendship.

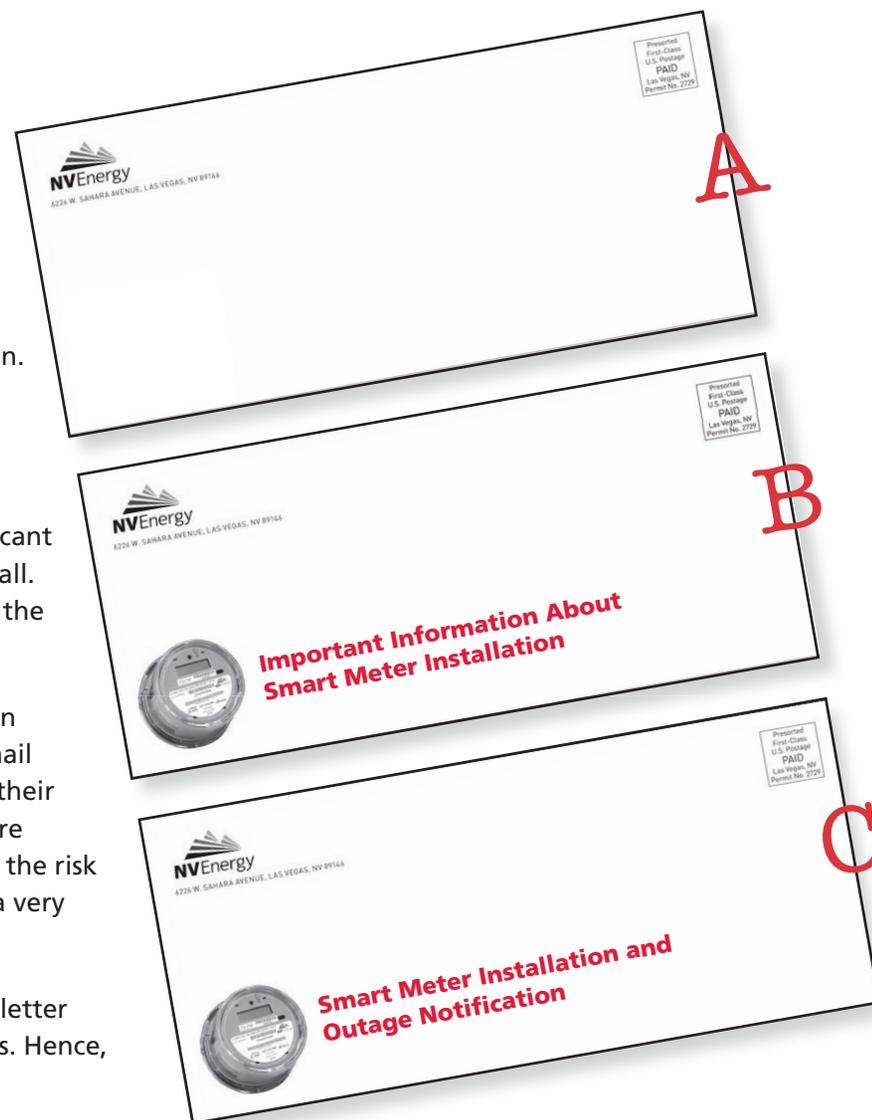
Which Envelope Would You Open?

Let's start with an activity. About 30 days prior to installing a meter at a customer's home, it is good practice to notify customers that an installer is coming and that the customer will experience a brief power outage during installation. Take a look at the envelopes to the right. If you were a customer, which one would you be more likely to open first? A, B, or C?

If you picked A or B, tests show there isn't a significant difference between them in terms of customer recall. Plus, only about 50% of customers recall receiving the notification letter.

If you picked C, then you are similar to customers in focus groups who say that they pay attention to mail that 1) appears to be a check or 2) tells them that their power is going to be turned off. These messages are powerful motivators. But outage messages exceed the risk tolerance of most utilities. Option C, therefore, is a very distant third option.

The point is that you cannot rely on a notification letter alone to build customer awareness of smart meters. Hence, you need to use the 90-60-30 strategy.



The 90-60-30 Strategy

No, 90-60-30 isn't a weight loss or smoking cessation program. It is an easy-to-remember shorthand for an overall smart meter deployment recipe. It describes what must happen 90 days prior to a meter installation, 60 days prior, 30 days prior, and so forth. It is also a simple phrase that is easily remembered.

The graphic to the right illustrates the 90-60-30 strategy.

The 90-60-30 strategy assumes that the smart meter system itself is constructed to ensure confidence. After all, 90-60-30 is about talking the talk. You need a model that demonstrates you can walk the walk.

CONSUMER CONFIDENCE COUNTDOWN

– 90 DAYS: Educate Employees & Community Leaders

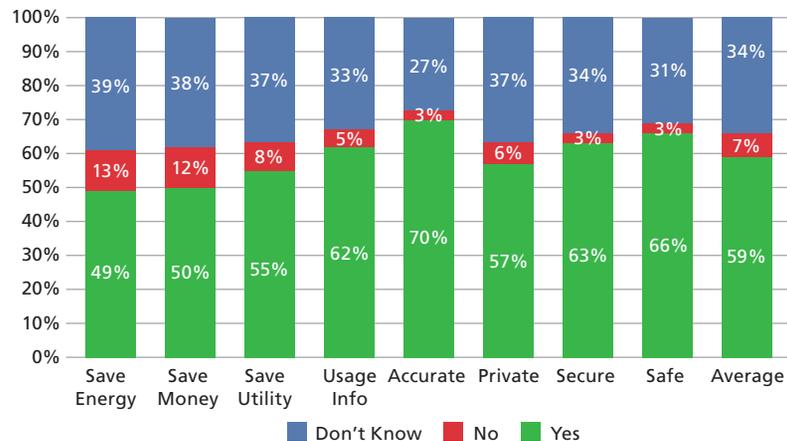
– 60 DAYS: Educate Community

– 30 DAYS: Notify Customers

0 DAY: **DEPLOY**



CUSTOMER ATTITUDES TOWARD
CONSUMER CONFIDENCE (N=629)



Even with the 90-60-30 day process, this graph illustrates that one third of customers surveyed responded "don't know" when asked about their confidence in such attributes as accuracy, security, and privacy. This suggests customers need to see it to believe it. How might you improve the 90-60-30 strategy so customers in the blue and red bars move to the green bars?

Walking the Walk in Seven Simple Steps

1. Safety

2. Security

W

3. Privacy

4. Accuracy

5. Deployment

6. Verification

7. Ownership

While 90-60-30 represents an externally-focused strategy, the Seven Simple Steps is an internally-focused strategy for how a utility establishes a consumer confidence foundation. Think of each step as a measurable quality gate that, when achieved, takes you to the next step.

- 1. Confidence in safety** enables customers to bring new products and services into their homes. Confidence in safety is first because product safety is a basic customer protection. A utility demonstrates its safety commitment by adopting smart metering technologies that comply with established safety regulations and standards.

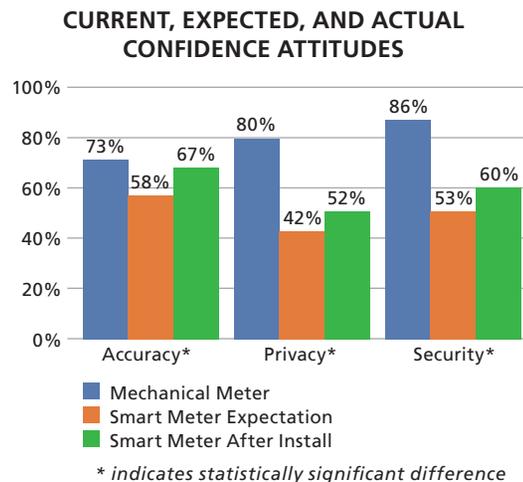
- 2. Confidence in security** enables consumers to learn new behaviors and habits without fearing the change. Confidence in security comes second because it is a fundamental prerequisite of smart metering systems. Customers need a safe path that does not introduce new risks into their lives. A utility demonstrates its commitment to security by implementing a Cyber Security plan.

- 3. Confidence in privacy** motivates customers to learn new behaviors and habits that involve personal choices and information. Once the smart metering system achieves security, privacy comes next. The utility is obligated to limit access to customer data and the analysis of that data. A utility demonstrates its commitment to privacy with a comprehensive privacy policy.

- 4. Confidence in accuracy** enables customers to accept that their new behaviors and habits of energy usage will be measured and billed properly. Once the smart metering system achieves privacy, accuracy comes next since an accurate smart metering system provides fair and proper measurement and billing. Third-party testing and correlation between an automated reading and a manual reading demonstrates a utility's commitment to accuracy.

- 5. Confidence in deployment** ensures that customers understand when their meter and other optional components will be installed, that they will be installed safely and correctly, and that the installation will be as

If customers can't verify performance for themselves, customers will assume the system is not working properly. Some consumers will come to believe that an old system they trusted has been replaced by a new system they don't. This is illustrated in the graph, which shows customers are more confident in their mechanical meter than their smart meter.

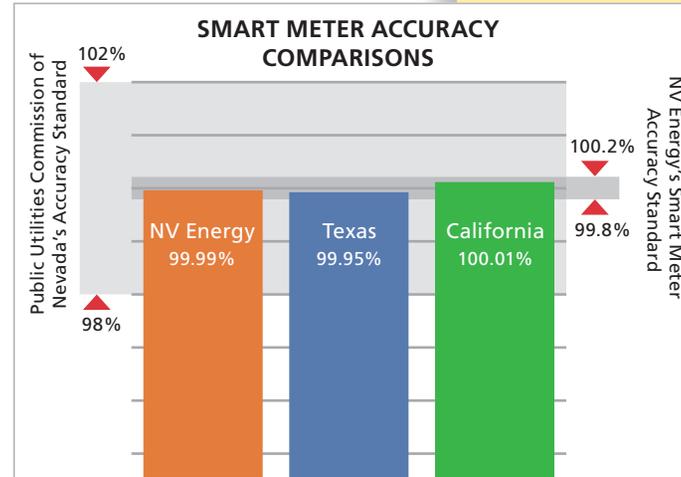


To demonstrate accuracy, NV Energy had the University of Nevada, Reno test a sample of its meters. The tests demonstrated that smart meters were 99.9% accurate. These results were

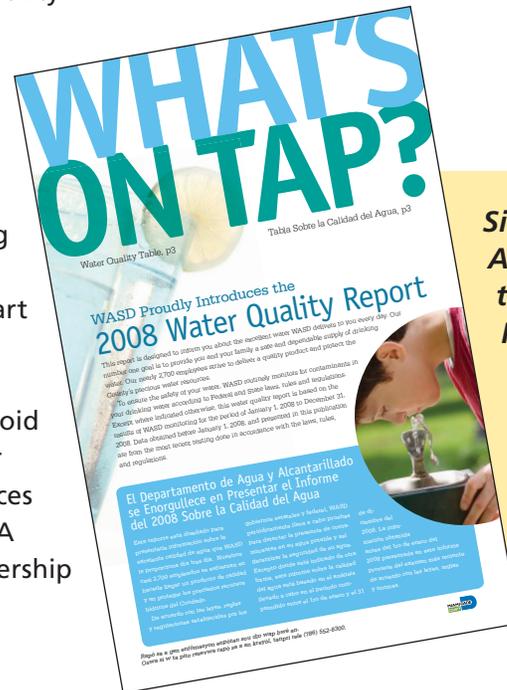
similar to the third-party tests ordered by the Public Utility Commissions in California and Texas to address consumer skepticism.

convenient as possible. Deployment comes next as the secure, private, and accurate system is established in the field. A utility demonstrates its commitment to a successful deployment by using the 90-60-30 strategy.

6. **Confidence in verification** enables customers to assess security, privacy, and accuracy for themselves, or to confirm that organizations they trust have verified how data and bills are handled. Verification comes next because the properly-deployed system then begins to operate, and system participants (including customers) confirm for themselves that the operations are successful. A utility demonstrates its commitment to verification by publishing verification results publicly.



7. **Confidence in ownership** enables customers to conclude that their new behaviors and habits utilizing the smart metering system provide them value. Ownership is the last step in demonstrating the performance necessary to create consumer confidence. Once customers have verified the smart metering system's achievements, they can then develop confidence in themselves. Customers can use the smart metering system's capabilities to avoid the surprise of a high bill, as well as improve their habits of energy usage, their selection of appliances and devices, and the premises in which they live. A smart metering system that provides energy ownership becomes an integral part of customers' lives.



Since 1996 the Environmental Protection Agency (EPA) has required water utilities to publish a yearly Consumer Confidence Report (CCR), which is then sent to all customers. The CCR documents the water utility's water quality against a set of standards, such as the level of arsenic in the water. It is an excellent model for communicating verification.

But Wait, There's **MORE!**

No, you don't get two smart meters for the price of one if you call in the next 30 minutes. But there is one more model of which you should be aware. You may recall this quote from the first page of this Handbook:

If customers' first experience with smart meters was negative, then their trust in the smart meter system would be low. And if trust was low, then the challenge of motivating customers to participate in demand response in the future would be daunting.

This idea was used in the ComEd Customer Applications Pilot (CAP) and is illustrated in the customer experience blueprint on the next page. The blueprint illustrates how a 90-60-30 smart meter installation experience was connected to subsequent experiences associated with engaging nearly 7,000 customers with dynamic rates, in-home information and automation technologies, and pricing notifications related to demand response and load shifting.

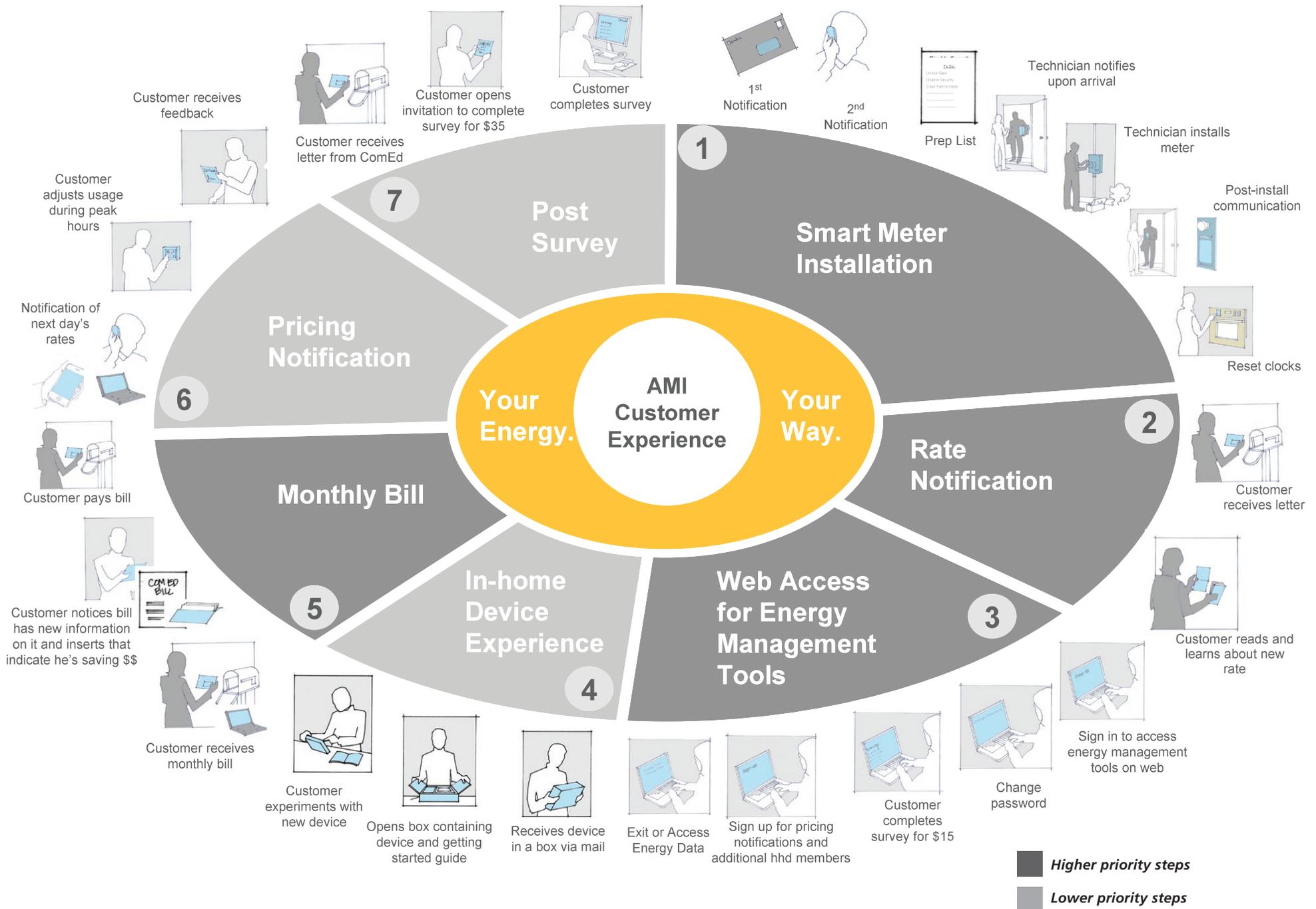
Approximately three months after delivering a neutral-to-positive smart meter installation experience, ComEd notified customers of their new dynamic rate and then enrolled customers on that rate using an opt out enrollment method. Two percent of customers chose to opt out. Without the neutral-to-positive installation experience, this number could have been much higher.

After all:

If you deliver a neutral-to-positive customer experience, people likely won't notice. However, if you deliver a negative customer experience, then all heck may break loose.

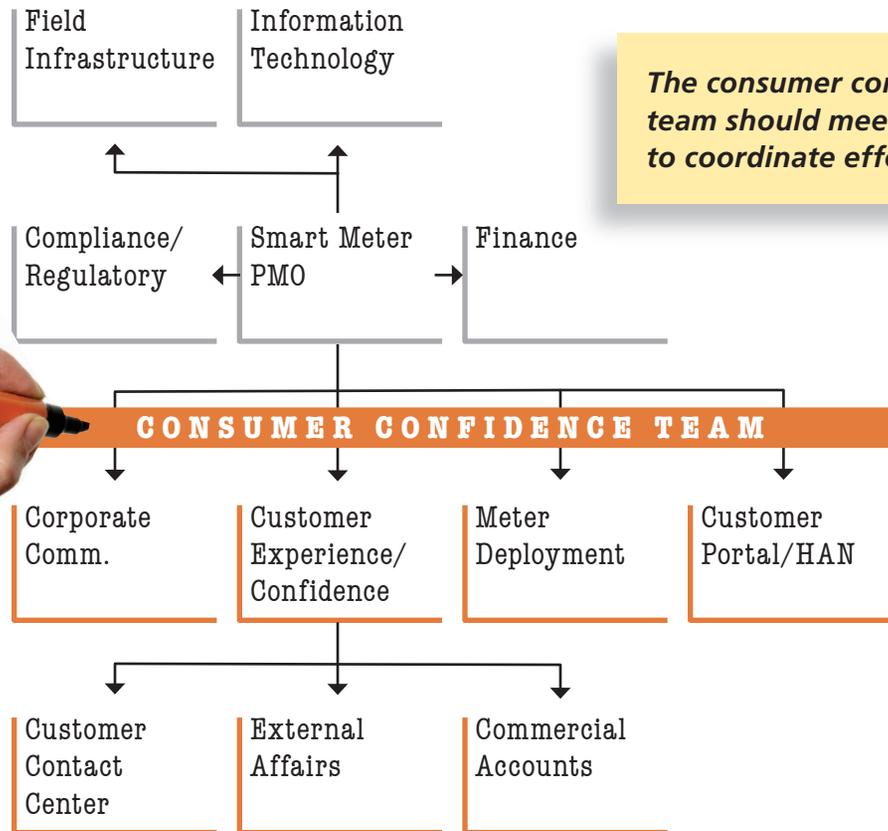
The take-away from this last model is that you cannot think of smart meter installation as an isolated event. You must think of it as the first step in a customer experience that will ultimately lead to energy ownership.

Smart meter installation is the first step in a customer experience that will ultimately lead to energy ownership.



Get Your Ducks in a Row

Before you embark upon implementing the previous models and strategies, you need to get your ducks in a row. This means organizing a team and developing plans.



The consumer confidence team should meet regularly to coordinate efforts.

The Team

The overall accountability for smart metering projects typically is assigned to a Smart Meter Project Management Office (PMO) that is chaired by a vice president or director. As illustrated in the diagram, the PMO orchestrates the various project workflows and functional areas.

The PMO delegates responsibility for customer experience and consumer confidence to the customer experience/confidence lead. This person coordinates with the functional areas that manage customer and stakeholder touchpoints to establish plans, execute plans, and monitor results. The typical functional areas include corporate communications, meter deployment, customer web portal/Home Area Network (HAN), customer contact center, external affairs, and commercial accounts.

The Plans

There should be multiple plans that govern the activities of the consumer confidence team. The primary plan is one developed by the Customer Experience/Confidence lead. Each of the functional areas will then have one or more plans that align with the customer experience plan. For example, external affairs will have a plan for stakeholder outreach. Corporate communications will have a plan for messages, media and communications calendars, and so on.

It is best that plans are developed around customer segments. The reasons for this are the varying needs of the different segments and the meter technology used by the different segments. For example, commercial customers are more concerned about outages and business continuity than residential customers. Large commercial customers typically are managed by utility account executives, whereas medium and small commercial customers are not. Military bases and airports have stringent access control issues, whereas other commercial entities do not.

Plans should be developed around customer segments.

The Coordination

The deployment of smart meters is dynamic and fluid. There will be adjustments to even the best plans due to weather, outages, inventory shortages, consumer complaints, media attention, regulatory orders, and so on. Thus, it is imperative that the consumer confidence team meet regularly to monitor the development and execution of plans, and ensure the various functional areas are coordinated. Regular meetings are the norm, with daily stand-up meetings suggested during key events (such as first week of meter deployment, launch of web portal, and so on). Good meeting practice is recommended, specifically an agenda, meeting minutes, and action items.

Developing a Project Name. *It is around this time that a project name is needed. The first project name is typically utilitarian: Advanced Metering Infrastructure (AMI) or Advanced Services Delivery (ASD). These are obviously not employee and customer friendly. The name will then transition to Smart Meter, a term that has become well known by employees and customers due to media attention. But it lacks the notion of a system or service. NV Energy created the name NVEnergize for its project. It represents a system or service. It is a “fanciful” trademark that blends the company’s name and business in a unique way, making the name memorable and protectable. The downside? The effort it takes to educate employees and customers what the name represents. Consider the above issues when you choose a name for your project.*

NVENERGIZE  *Creating an energy-smart future.*

– 90 Days: Educate Employees & Community Leaders

In 2010, a Purdue University student who was conducting a research project for her undergraduate thesis called 100 utilities that were planning or were in the process of smart meter/grid deployments. In the calls, the student portrayed herself as a person moving to the utility's service area and asked six questions. The questions involved getting information about the smart grid and smart meters.

Only 34% of utilities were prepared to answer questions about the smart grid.

Can your call center effectively answer questions about the smart grid and smart metering? The student found that only 34% of the utilities were prepared to answer questions about the smart grid.

Additionally, only 32% were prepared to provide additional information about smart meters. These results suggest a lot of room for improvement.

When customers can't get satisfactory answers to their questions regarding smart meters, they escalate the issue to their community leaders. Community leaders then refer the issue back to the utility. The utility then has to explain the issue to both the community leader and the customer, who wonder why this wasn't done in the first place.

Thus, at some time prior to 90 days before meter installation (the earlier the better), you should:

- Establish a smart meter presence on your website
- Educate all employees about smart metering systems
- Educate community leaders about smart metering systems

Establishing a Web Presence for your Smart Metering Program

We know what you are thinking. How does a web presence for smart metering link to educating employees and community leaders? There are a few reasons.

- The amount of time you'll have to teach an employee or community leader will be minimal. Thus, there needs to be a place for these people to go to learn more if they so choose.
- If your employee and community leader education works as planned, they will tell others. And these other people need a self-service solution for smart metering information.
- All education projects start with content analysis. What better way to organize your smart metering content than in a public website? Plus, a website can contain all your content.



There are numerous utility websites with smart meter content that you can explore for ideas. In our review of these websites, we've developed a Top 12 Principles for a Smart Metering Website.

1. Verify compatibility with all current web browsers on desktop, laptop, tablet, and mobile devices.
2. Ensure your utility's home page has an easily-identifiable link for customers to access smart metering content.
3. Structure your smart metering micro site by stakeholder and customer segment (Community Leaders, Residential, Small Business, and so on), with general content accessible to all.
4. Organize your content in a before, during, and after structure, representing the phases of the project.
5. Include all materials you present publicly on the website in .html, .pdf, or YouTube® format: presentations, mailings, brochures, door hangers, FAQ sheets, advertisements, and so on.
6. If legally permissible, include links to content produced by others that includes your smart metering project. For example, newspaper articles, television news segments, regulatory filings, and so on.

7. Integrate links to third-party content, reports, and so on from reputable or peer-reviewed sources that address challenging consumer confidence issues, such as accuracy, security, privacy, health, and value. A "Myths vs. Facts" page is a useful approach for structuring this content.
8. Include a map, schedule, and address search that lets customers know when they can expect meter installation.
9. Use a mixture of media, from text to video.
10. Write at the 8th grade reading level.
11. Adopt a website architecture that enables you to rapidly add and enhance content at a low cost.
12. Provide a means for customers to tell you what they think or for them to ask questions. This could be an e-mail form, an online survey, Twitter®, Facebook®, or a moderated discussion board.

REQUESTED CUSTOMER EDUCATION TOPICS (N=33,865)



What content counts? We mailed 30,000 customers a smart meter installation letter that included a reply card. The reply card asked customers what topics they wanted to learn more about. While only 2% of customers returned the reply card, the most requested topics for additional education were Benefits and How It Works. This prioritization is consistent with other customer research we've conducted. Consider making this content prominent on your website.

– 90 Days: Educate Employees & Community Leaders

Educating All Employees (Especially the Front Line Employees)

We know, we know. All your employees are working really hard. Managers are reluctant to schedule employees for training. And some employees' jobs aren't even related to smart meter systems, so why do they even need training? But think of it this way. You are spending hundreds of millions of dollars on the biggest customer-touching technology roll-out of the century. If your employees aren't favorable toward smart metering, how favorable can you expect your customers to be?

If your employees aren't favorable toward smart metering, then your customers likely won't be either.

For general employee education about smart metering, we suggest that your training solutions focus on these learning objectives:

Employees voluntarily choose to be an advocate for the smart meter system, communicating positively with other employees, family, friends, and neighbors about the system.

- Explain how the smart meter system aligns with the state's energy policy.
- Outline the business case for the smart meter system.
- Explain how the smart meter system works.
- Discuss the benefits the smart meter system offers.
- Differentiate between smart meter myths and facts.
- Outline the schedule for the smart metering project.

You should estimate 60 to 120 minutes to deliver training that reflects the above learning objectives, depending upon the method you use. Here are some suggested methods (which can be combined):

Town Hall

A town hall meeting, facilitated by executive sponsors and members of the smart meter project team, not only teaches the content but demonstrates executive support for the project.

Training Class

NV Energy's employee education courses featured a slide deck that used simplified diagrams and analogies to explain the smart metering system. These same slides were used for customer education as well (which makes sense).



Slide from NV Energy's employee (and customer) education course.

Online Education

SDG&E developed an online, self-paced employee education program that enabled employees to learn about smart metering at their desks. The program was hosted by "meter people," animated characters that represented the various smart metering benefits.



Anne Smith, SVP and executive sponsor of SDG&E's smart meter project, leads an employee town hall meeting.

Employee Intranet

Both NV Energy and SDG&E developed an employee Intranet site. The purpose of the Intranet site is to provide employees the latest information about the smart metering project. In addition to educational materials, the Intranet site contains project schedules, deployment maps, key metrics, success stories, and so on.



NV Energy employee Intranet site for smart meter information.

Other Communication Channels

NV Energy and SDG&E used their internal newsletters to generate employee awareness regarding smart metering. They also used signage, print and digiboards, to generate employee awareness of smart metering.

What other internal communication channels do you think would help educate employees about smart metering?

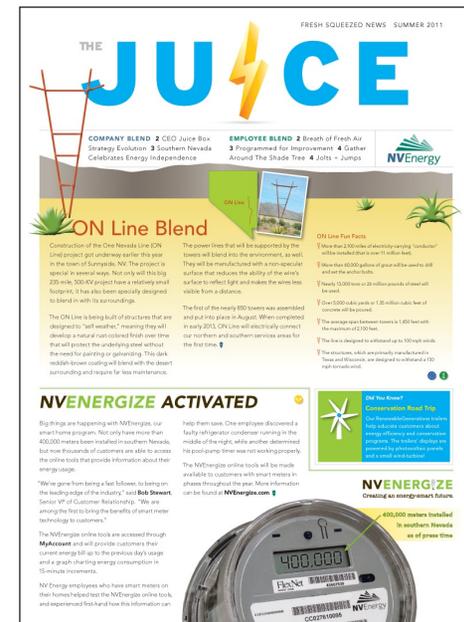


Screens from SDG&E's online employee training.

Front-Line Employee Training

When NV Energy launched its smart metering project, NV Energy established a "Resolution Center," a small group of highly-trained customer care employees. Any customer who called with questions about smart metering would be transferred to this group. The group's specialization in smart meters enabled it to answer customer questions and address customer issues.

For field installers, whether they are employees or an installation contractor, you must establish clear rules for customer interaction. Equipping field installers with pocket cards (see pg. 27) is a good tactic.



NV Energy employee newsletter featuring smart meters.

- 90 Days: Educate Employees & Community Leaders

Community leaders must not be blindsided or surprised by constituent questions about smart metering.

Educating Community Leaders

Who are community leaders? They are a broad category of stakeholders who have the potential to positively (or negatively) influence your smart metering projects on a wide scale. They are also the first place customers will turn to as a trusted third-party source of information. They include:

- The elected leaders and staff of public entities (cities, towns, and communities in your service territory)
- State and local interveners and advocates
- Newspapers, radio, TV, and online news channels
- Business and consumer organizations
- Union leadership

Here are some successful methods for educating community leaders.

Stakeholder Collaboratives

One of the best means of educating community leaders is to involve them in the smart metering project as an advisory board. ComEd used this approach effectively for its Customer Applications Pilot.



Edgar Patino, Manager of Local Government Affairs at NV Energy

One-on-Ones

A one-on-one meeting is perhaps the most common form of community leader education. We asked Edgar Patino, Manager of Local Government Affairs at NV Energy, three questions about how he works his magic.

1. What's your goal for educating community leaders?

E.P. - Community leaders are interested in fully understanding the potential impacts to their constituents. Thus, I have two goals. First, I want community leaders to feel comfortable when they are talking with the public about our programs. They should understand the key program benefits and some basic terminology. Second, I don't want them to be blindsided or surprised when constituents ask them tough questions about a program. I make it my job to ensure they are prepared.

2. How do you accomplish these goals?

E.P. - I aim to be a community leader's trusted advisor regarding energy. In this role I learn all I can about our projects so I can discuss the good, the bad, and the ugly with the community leader. I proactively bring up the subject and all related issues. Furthermore, I start interacting with community leaders as far before the 90 days in the 90-60-30 strategy as I can.

3. What is your approach with a community leader?

E.P. - I don't cold call. I prefer to first meet the leader at a community event and plant the seed. I might start with something they might have heard such as smart meter privacy.

The more the topic relates to their constituent's needs or concerns, the better. That gets them interested. Then I'll ask for a meeting to discuss the issue further. Meetings are anywhere from 10 minutes to 30 minutes. Some are formal with a presentation, and some are informal. I always adjust to the needs of the leader.

Edgar Patino's Formula for Being a Trusted Advisor

- **Credibility.** I educate myself thoroughly about the program so I can discuss all aspects of the program. Being willing to talk about the negative aspects can significantly boost credibility.
 - **Reliability.** My community leaders know that I am proactive in reaching out to them with the information they need to know. And they know I'll follow up on anything they request.
 - **Intimacy.** Some community leaders want to talk about family before getting down to business, others are no-nonsense, all business. I adjust my style and tailor my approach to the person.
 - **Orientation.** I'm oriented to do what's in the best interest of the community leader. If he or she has a question at 2 a.m., they have my number and I will take their call.
-

Events

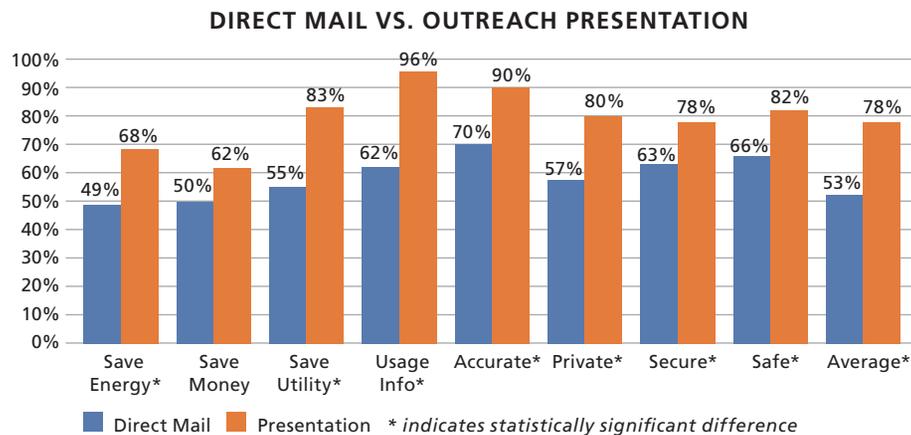
NV Energy also hosted events for media and community leaders in both southern and northern Nevada to demonstrate the NVEnergize program and explain its benefits. One of the northern Nevada events was held while the Nevada State Legislature was in session, so in addition to elected officials and their staff, employees of the Legislative Council Bureau visited the event to learn more. In southern Nevada, the event was held at one of the company's locations and was well attended by community leaders and the media, who were able to visit four "stations" that explained the NVEnergize program.



NV Energy's Envision event brought community leaders together to learn about smart metering.

- 60 Days: Educate Community

What's the more effective tactic to positively influence consumer confidence? Sending customers a letter with a FAQ sheet or giving a live presentation at a Rotary or homeowners' association meeting? To investigate this question, we surveyed customers who received this communication and learned two things (see the bar chart). First, outreach presentations are 20% to 30% more effective in influencing consumer confidence than direct mail. Second, customer attitudes regarding smart metering saving customers money are not statistically different between the two tactics.



Community outreach influences confidence more than direct mail.

Why the difference? We believe the difference is due to the following:

- A live, charismatic speaker is more believable than a letter and FAQ sheet in a white envelope.
- A 30-minute presentation is more effective than the one to two minutes of attention customers give to the letter.
- The presentation affords richer media than the letter.
- Customers can ask questions and get immediate answers during the presentation. The letter requires a trip to the utility's website or a call to the utility's call center.

Obviously, outreach presentations have the effectiveness advantage, while letters have the efficiency advantage. You'll likely end up implementing both. But given this data, we advise allocating more of your communication budget to outreach presentations.



Presentations with simple graphics and emotional analogies increase

Customer Outreach Approaches

The approaches for customer outreach come in three sizes:

Small. PowerPoint community outreach presentations. Use deployment project managers as speakers, as their hands-on experience increases credibility. Keep the slides visual with simple graphics and compelling emotional analogies. Include props in the presentation, such as an old mechanical meter and a new smart meter - customers are amazed by the weight difference when they hold the meters (smart meters are much lighter). Be sure to ask attendees what they think about smart metering through a survey card.

Medium. Booths for trade shows, home shows, state fairs, street fairs, back-to-school nights and so on. Focus booth content on how smart metering works and the benefits of smart



A booth with graphics, props, and handouts enables rich explanations.

metering. Include props and basic demonstrations that involve visitors. Have something fun to hand out. Be sure to ask booth visitors what they think

about smart metering through a survey card.

Large. Mobile smart grid demonstration trailer. Inside the trailer you'll find an exploratorium of touchscreens and hands-on demonstrations that enable customers to explore the world of smart metering. Be sure to ask trailer visitors what they think about smart metering through a survey card.



A mobile trailer with interactive exhibits and hands-on demonstrations encourages engagement.



understanding.

- 30 Days: Notify Customers

If your power was going to be shut off by the utility, wouldn't you want the utility to tell you beforehand? Sure you would. While there are many people who leave home to go to work, there are many who stay at home and work at home. People have electronics in their home that they are concerned about, such as heaters for a tropical fish tank, computers for day trading, and so on. Common courtesy is that you notify customers when you know you may disrupt their lives.

Expect that only 50% of customers will recall seeing your notification communications.

Common courtesy aside, our research shows that customer satisfaction with the installation experience and customer understanding of smart meters are predictors of consumer confidence. Both of these outcomes start with the notification process.

The Letter

About 30 days before smart meter installation you should send customers a letter. The letter should have four components:



Envelope

Numerous focus groups suggest a plain white envelope with utility logo. Our experience in the field suggests that this works just fine,

with 50% of customers being able to recall receiving the envelope. To increase awareness of smart meters, we've tried adding a picture of one to the envelope (no noticeable effect on awareness or recall) and envelope messaging (again, no noticeable difference). We have yet to try the Outage Notification message. Your tactics will depend upon whether 50% is good enough, or if you want to increase the recall rate.

Letter

The goal of the letter is to set customer expectations. Installation is a procedure, so you should write your letter from that perspective. Good procedures describe who the actors are and what they do. During installation, the utility will do some steps, and the customer will do other steps. Here are some tips for letter writing:

- Write at the 8th grade level or below.
- English on the front, Spanish (or other language) on the back (if appropriate for your service territory).
- Make it easy for the customer to scan. Use numbering and bullet points as appropriate. Name each step with a short description.
- Specify the customer's telephone number for the reminder call (we will discuss this shortly). Provide customers a means to change that number.



Date
Name
Address
City, State Zip

Dear (Customer Name):

Within 30 days, NV Energy will install a new smart meter at this service address. This process will cause a 10-minute power outage. After installation, your service will return to normal.

WHAT WE WILL DO

1. **We will make a reminder call to (XXX-XXX-XXXX) a few days before installation.**
If this is not your correct phone number:
 - E-mail your service address and phone number to NVenergize@NVEnergy.com, or;
 - Call 702-402-4273
2. **We will knock on your door.** Our authorized installer, Scope Services, or NV Energy, will arrive between 7 a.m. – 5 p.m. on the installation day (Monday – Saturday.) They will have a valid NV Energy ID badge. They will not need to enter your home.
3. **We complete the installation.** We remove the old meter, install the new meter, restore service and verify proper function of the new smart meter. Again, this should only take 10 minutes.
4. **We leave a door hanger and welcome kit.** The door hanger provides a record of the work we performed. Also, look for the welcome kit that contains additional information on NVenergize, other helpful energy programs and services and a special gift.

HOW YOU CAN HELP

1. **Tell other people in your household.** Ensure they are aware of the forthcoming installation.
2. **Make sure we can access the meter.** You do not need to be home during installation. Please help our installers by removing any barriers such as locked gates, pets or other debris.
3. **Reset clocks and other devices following the installation.** We apologize for the inconvenience that the short outage will cause.

Thank you. This technology will help you better manage your energy use in the future. Please visit NVenergize.com or call us at 702-402-4273 if you have questions.

Sincerely,

Gary Smith
Director, NVenergize

P.S. See our enclosed postcard to be one of the first to experience new NVenergize services.

NVENERGIZE
Creating an energy-smart future.

P.O. BOX 98910, LAS VEGAS, NEVADA 89151-0001 6226 WEST SAHARA AVENUE, LAS VEGAS, NEVADA 89146
P.O. BOX 10100, RENO, NEVADA 89520-0024 6100 NEIL ROAD, RENO, NEVADA 89511 NVEnergy.com

FAQ Sheet

A FAQ sheet provides customers additional information to help them understand the function and benefits of a smart metering system. FAQ sheet content should answer these five questions:

- What is a smart meter?
- How will it help you?
- Are smart meters accurate?
- Why is the utility installing smart meters?
- Who is paying for smart metering?

Emotionally-framed communications appear to have a more positive influence on consumer confidence than rationally-framed communications.

Most of these questions address the benefits of a smart meter system. However, utilities have had trouble explaining smart meter benefits to customers. Rational benefits of saving money and reducing greenhouse gas have not resonated with customers.

The alternative is to focus on emotional benefits, which are associated with customer problems or concerns. Our analysis of utility call center interactions suggests that “surprise and concern” are emotional reactions that are sometimes felt by customers when they receive bills or have to establish payment arrangements. Features of a smart metering system, such as bill-to-date and bill alerts, are solutions that can address these types of issues.

- Provide a web address and telephone number for further information.
- Sign the letter with the name of a real person, preferably the person in charge of the project. This communicates accountability to the customer, which increases trust.
- Include a P.S. for a specific action you’d like the customer to take.

- 30 Days: Notify Customers

We tested the differences between two different FAQ sheets with 30,000 customers. Half received the rationally-framed FAQ sheet (Smart Meter), and the other half received the emotionally-framed FAQ sheet (Speedometer). We surveyed a sample from each group and asked them their attitudes regarding consumer confidence.

NVENERGIZE
Creating an energy-smart future.
Smart Meter Fact Sheet

What is a smart meter?
A smart meter is a digital electric meter. It stores energy usage data every 15 minutes. The meter will securely send this encrypted, accurate data to NV Energy every day. Smart meters are the cornerstone of NV Energy's NVEnergize project.

How will they help you?
Smart meters provide the data for an "energy speedometer." With this data our future website will provide you helpful information. You will see how much energy you use at specific times. You will know how your usage compares to your budget. Other features will enable you to start service, stop service, and communicate with us about your bills more easily.

Are smart meters accurate?
Yes. There are three tests that confirm this. First, the manufacturer tests all meters. Second, NV Energy tests a sample of meters. Third, the University of Nevada, Reno conducted independent lab tests. All tests show smart meters meet American National Standards Institute (ANSI) accuracy standards. Thus, smart meters meet Nevada's regulatory standard (98%-102%). They also meet NV Energy's stricter standard (99.8%-100.2%). When installed, NV Energy will read meters manually and remotely for a period of time to ensure our system is operating properly.

Who is paying for NVEnergize?
A U. S. Department of Energy grant provides half the \$300 million cost. NV Energy's share of costs will come from future cost savings.

Learn more and see the future at
NVEnergize.com • 702-402-4273

Smart Meter FAQ Sheet (Rational)

What if cars didn't have speedometers?

You'd probably worry a lot more about speeding tickets. Using energy has been a lot like driving without a speedometer. What changes would you make if you knew how much energy you were using? More than likely, you would change your energy use. It is like changing your driving speed when the speed limit changes. The new smart meter and other NVEnergize technology will bring you fewer surprises, more control and easier budgeting.

What is a smart meter?
A smart meter is a digital electric meter. It stores energy usage data every 15 minutes. The meter will securely send this encrypted, accurate data to NV Energy every day. Smart meters are the cornerstone of NV Energy's NVEnergize project.

How will they help you?
Smart meters provide the data for an "energy speedometer." With this data our future website will provide you helpful information. You will see how much energy you use at specific times. You will know how your usage compares to your budget. Other features will enable you to start service, stop service, and communicate with us about your bills more easily.

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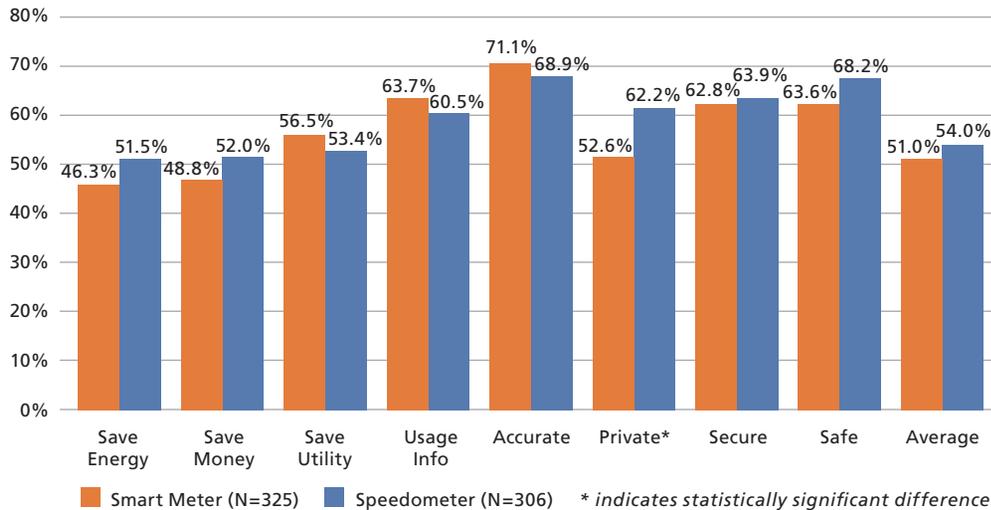
NVENERGIZE
Creating an energy-smart future.

NVEnergy

- Fewer Surprises
- Easier Budgeting
- Increased Savings Opportunities
- Greater Ownership

Speedometer FAQ Sheet (Emotional)

CONSUMER CONFIDENCE ATTITUDES



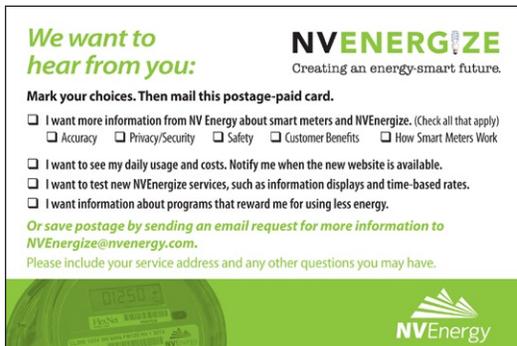
Emotionally-framed Speedometer FAQ contributes to stronger confidence attitudes.

The results suggest that the emotionally-framed Speedometer FAQ sheet has a slightly stronger effect on consumer confidence attitudes than the Smart Meter FAQ. The statistically significant result is that customers receiving the Speedometer FAQ perceive that smart metering will be more private.

This research is directional in nature and is based on varying only the FAQ sheet. But consider the effect if we scale up this approach. What if the entire messaging campaign was focused on the emotional benefit of "fewer surprises, reduced worry, easier budgeting." We predict an even stronger effect. And best of all, with interval data and good web tools that are delivered within 30 days after meter installation, the utility can deliver these benefits quickly.

Reply Card

The final element of the notification letter is a reply card. The reply card is optional and you may want to use it sparingly (at NV Energy we used it for just 30,000 customers), but it does give you a good pulse of customer interest. In our reply card test, we were interested in two things: what additional information and education customers wanted and their interest level in smart metering tools and services. Overall reply card response was 2%. As we mentioned earlier, the top requested educational topics were *benefits* and *how smart metering works*. The top service customers wanted information about *was programs that reward them for using less energy*.



Overall reply card response rate was 2%.

The Automated Phone Reminder

About three days before the smart meter is installed at the customer's premises it is good practice to remind customers that the installer is coming. An automated phone call is the way to do this. Ideally, the message you send to customers would include a two-hour time window of when the installer will be at their premises. Yes, you read that correctly. A two-hour time window. And stop laughing.

What you also need to know is that customers defined this requirement in our research. Yet we know of no utility or installation vendor who can deliver on this requirement within their budget. So while you'll want to move toward this desired expectation, you'll likely have to live with telling customers just the day you will be there. If you do this, expect some complaints. If there is a claim, expect a potential story in the newspaper or on television.

Here is an example of the automated phone message:

“Hello, this is NV Energy calling. Para escuchar este mensaje en Espanol, oprima el numero dos.

One of our authorized representatives will be at your home or business within the next 5 business days to replace your electric meter with a new digital meter.

You do not need to be present for this brief process.

Your service will be interrupted briefly, so clocks and other electronic devices may need to be reset. We apologize for this inconvenience.

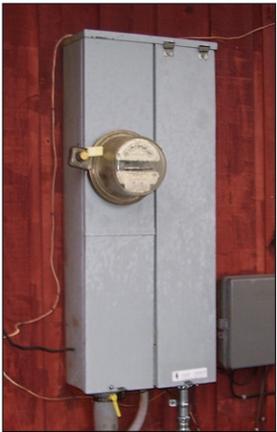
Should you have any questions regarding the meter installation, please contact us at 402-4273.

Thank you. . . . Good Bye.

Press the 3 key to replay this message.”

0 Day: DEPLOY

When an installer arrives on site to install a meter, the installer might encounter:



A pristine mechanical meter ready for replacement.



A supportive customer who has knitted a figure of the utility's advertising spokesperson in honor of the event.



A customer who has declared their home a smart meter free zone.

Smart meter installation typically proceeds quickly and has minimal impact on the customer, provided the installer follows a procedure similar to this one:

1. **We will knock on your door.** Our authorized installer or NV Energy will arrive between 7 a.m. – 5 p.m. on the installation day (Monday – Saturday). They will have a valid NV Energy ID badge. They will not need to enter your home.

2. **We complete the installation.** We remove the old meter, install the new meter, restore service and verify proper function of the new smart meter. Again, this should only take 10 minutes.
3. **We leave a door hanger.** The door hanger provides a record of the work we performed and some information about the smart metering system.

The installer must follow the policies defined by the utility and/or the public utilities commission (or similar governing organization). These policies range from:

- Opt out
- Postponements, with escalating follow-up
- Negotiated solutions (e.g. moving the location of the meter)
- Smart meter or nothing

Smart meter installation is a relatively simple recipe, as it should be. The recipe above delivers a neutral-to-positive customer experience. However, there are some enhancements that anecdotal evidence suggests has a positive effect on customer satisfaction, claims reduction, postponement reduction, installer piece rate, and adoption of smart meter tools.

In-Field Liaison Program

SDG&E credits much of the success of its neutral-to-positive smart meter deployment to in-field liaisons (affectionately called “Infielders”). An Infielder is a utility employee (SDG&E used retired energy auditors) who follows the installers. The goal is for installers to hand off customers who have questions or issues to the Infielder, so the installer can remain productive installing meters. Here are some Infielder activities:

- Assist special needs installs (i.e. reset clocks for elderly customers).
- Respond to escalated customer inquiries – high bills, how to read the meter, upset customers related to the smart meter.
- Share information on all SDG&E programs and services.
- Provide feedback back to the project including the installation experience, customer communications and collateral materials.
- When not responding directly to customer inquiries or requests, conduct “cold call” door-to-door visits in neighborhoods that have recently had smart meters installed.
- While in field, the Infielders answer questions, provide literature on company programs and services and most importantly, obtain unsolicited feedback on the installation experience. Information collected is used to make adjustments or changes to the process, as appropriate.

Pocket Cards

During meter installation, it is important to keep installers moving so they can meet their daily quota. In addition to the Infielders, SDG&E provided installers “Pocket Cards” that answer basic questions about the smart meter project. These cards also had contact information (phone and website) if customers had additional questions. If a customer is home and has questions about the project, the installer can hand the customer a card. NV Energy also utilized this practice with not just installers, but other crews in the field.

SDG&E
A Sempra Energy utility®

Smart METER

What are smart meters?
Smart meters are digital meters with two-way communication that send energy use information to SDG&E®. Unlike existing meters, smart meters have a computer chip that records energy usage.

In the future, energy use information will be recorded every hour at your home and every 15 minutes at a business. This information can help you understand how you are using energy so you can make money-saving and environmentally friendly changes.

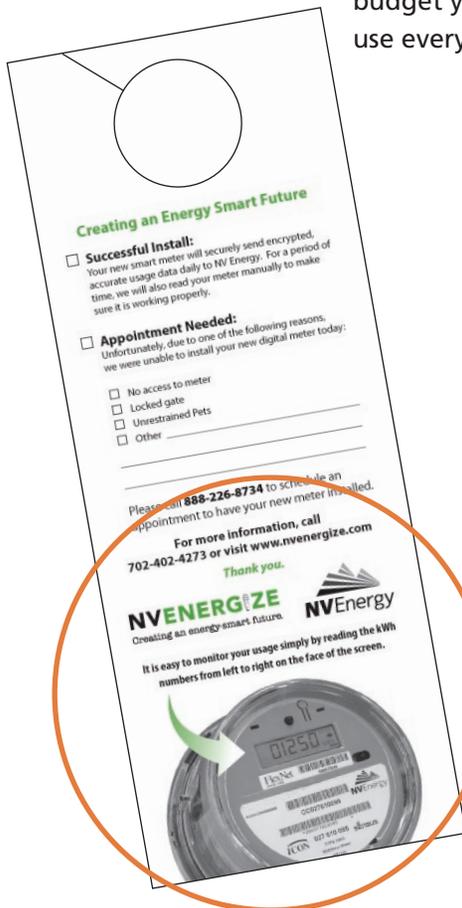
For more information, visit
www.sdge.com/smartmeter
or call 1-800-411-7343.

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- 0 Day: DEPLOY

Door Hangers

As described in the procedure previously, the last step is to leave a door hanger that provides a record of the work. Some utilities think that this door hanger is just that – a record of the work. However, it should be something much more. After all, the budget you have to educate customers is limited. You need to use every piece of communication real estate wisely.



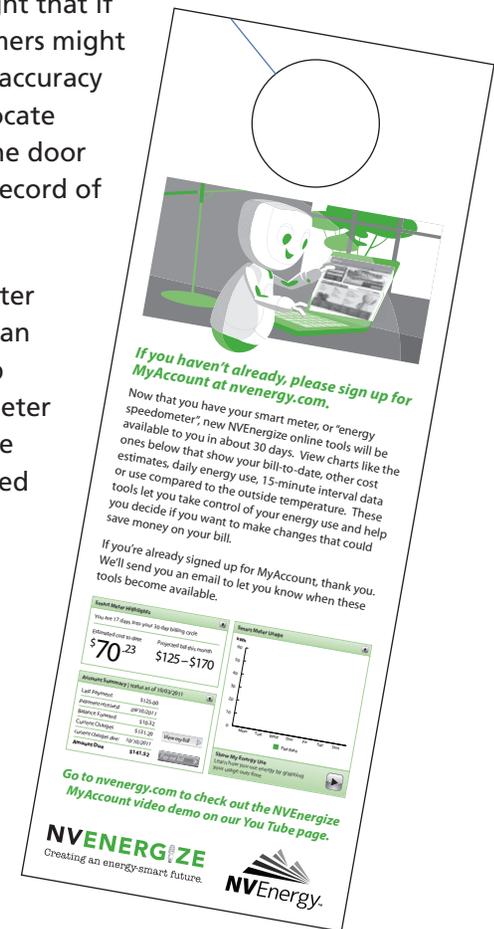
Door hanger that includes education on how to monitor meter readings.

Use every piece of communication real estate wisely.

In the numerous focus groups we've conducted, it is surprising the number of people who say they check the readings on the meter against their bill. When we ask customers to prioritize educational content, being able to read the meter is toward the top. There is also the thought that if we didn't teach this, customers might be suspicious and trust the accuracy less. Thus, we strongly advocate including this content on the door hanger, in addition to the record of work information.

Nine months into smart meter installation, NV Energy began delivering smart meter web tools about 30 days after meter installation. To market these features NV Energy enhanced the door hanger. It added a page to the door hanger that promoted bill-to-date, projected bill, and smart meter usage graphs.

Panel added to the door hanger to promote online smart meter tools.

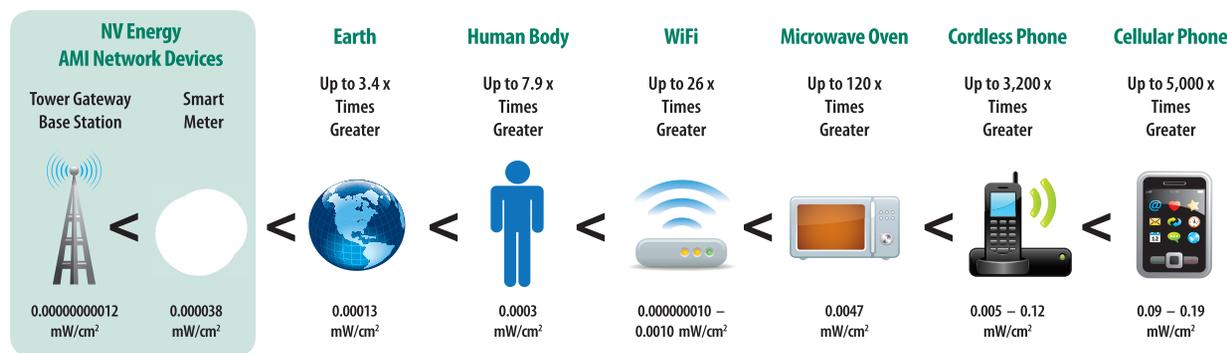


Welcome Kit

Another communication tactic we've tried is a Welcome Kit. This is a branded plastic bag containing a brochure and CFL bulb that is left behind after installation (the bulbs reflected a collaboration with an NV Energy energy efficiency program).

While customers liked receiving the bulbs, the logistics to distribute the Welcome Kits were challenging. Recall of the Welcome Kits in our post-deployment surveys was low. Conclusion: Invest in other communication methods.

CONSUMER UNCERTAINTY AND OPT OUT



Some consumers had fundamental differences regarding the science of RF exposure and health effects.

The summer of 2011 signaled a noticeable rise in consumer uncertainty regarding the safety and privacy of smart meter systems. This uncertainty was fueled by consumer activism that originated in California, Maine, British Columbia, and parts of Illinois, and was amplified to other states by social and mainstream media. Nevada was not immune. Postponement requests tripled over a six-month period.

One-on-one meetings with consumer activist leaders could not resolve the issues. There were fundamental

differences regarding the science related to radio frequency (RF) exposure and health effects. The same was true for privacy concerns. Ultimately, the issues were escalated to the Public Utilities Commission of Nevada (PUCN).

The PUCN conducted a series of workshops to hear the views of all stakeholders. In the end, the PUCN ordered an opt-out option for consumers. Similar to opt-out options in other states, Nevada consumers who opt out will bear the costs associated with that option.

+ 5 Days: Survey and Support Customers

In September 2010, NV Energy was contacted by an investigative news reporter. The reporter had received two complaints from customers regarding high bills associated with their smart meters. This was an interesting development, especially since NV Energy had not yet installed any smart meters.

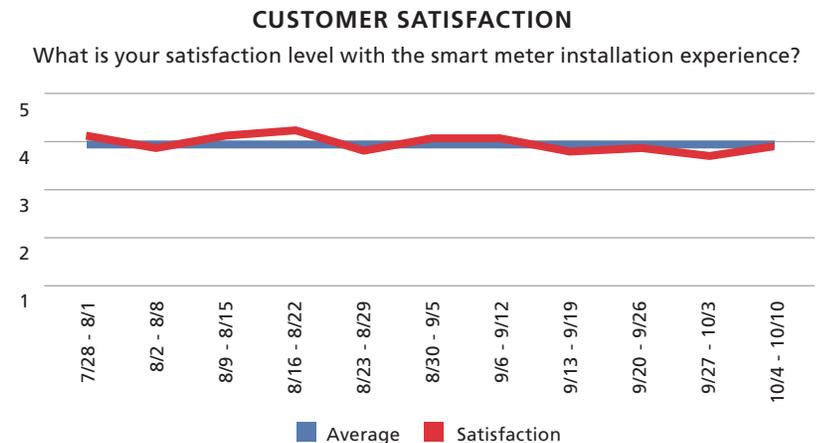
In September 2010, two customers complained that smart meters caused high bills. No smart meters had yet been installed.

Customer support issues tend to fall into the following categories:

- Access – The customer wants to set up an appointment for meter installation.
- Opt Out – The customer is concerned about safety, security, accuracy, and/or privacy and does not want a smart meter installed at their premises.
- Complaints – The customer experienced some sort of problem during installation and wants to vent.
- Claims – A customer desires compensation for a problem the customer perceives was caused by smart meter installation. For example, computer stopped working. Or, dog escaped yard and was killed by a car (true story).

- High Bill – A customer receives a high bill after smart meter installation and perceives the smart meter to be the cause.

The number of complaints, claims, and high bill issues should be minimal – less than 0.5% of all meters installed. Weekly post-installation customer satisfaction surveys, conducted by phone a couple of days after installation with as many customers as you can afford (50 provides for good confidence; NV Energy's budget allowed for 30), should indicate neutral-to-positive satisfaction.



Survey results dashboard showing a neutral-to-positive smart meter installation experience.

Assuming that the number of post-installation issues is relatively few, it is important to take each issue seriously. If you don't resolve the issue to the satisfaction of the customer, the risk is that the issue will spin out of control and end up on an investigative news program. Here are a few stories illustrating ideas for resolving customer issues featuring some very innovative solutions for building consumer confidence.

Story 1

It was early in the meter installation process and we were really watching customer complaints. A customer who received the smart meter got their first bill and it was substantially higher than their previous bills. They called to complain, citing the meter as the cause. We checked the usage data and it indicated that it might have something to do with the meter. I arranged to meet with the customer at their home to investigate. On the way to the customer's home, just in case, I stopped at a store and bought a few plug-in energy monitoring devices. Once at the customer's home we ran some tests that indicated the customer's new smart meter was accurate but the customer's old mechanical meter was slow – it was significantly underreporting the customer's usage. So now we had the issue where the smart meter did cause the high bill, but it was because the

older meter was slow. I explained this to the customer and proposed an approach for them to determine for themselves that the smart meter was accurate. I gave them a plug-in energy monitoring device and taught them how to use it. Since the plug-in energy monitoring device was a third-party device in a sealed package, it was easy for the customer to trust it. I also taught them how to read the kWh information on the smart meter. I gave them a few days to experiment with the usage of different electronics in their home then followed-up with them. The plug-in energy monitoring device helped them determine the truth themselves: that the old meter had been underreporting their usage. While they weren't happy about the bill increase they now faced, their confidence in the smart meter increased.



A plug-in energy monitoring device.

Giving a plug-in energy monitoring device to a customer helped him determine the smart meter was accurate.

For every 100,000 meters installed, expect 500 calls (0.5%) that involve a complaint, claim, or high bill issue.

+ 5 Days: Survey and Support Customers

Story 2

We received a letter from a customer that lived in California who had a vacation home in Las Vegas. The letter included copies of the customer's smart meter data from the web portal. The data showed that weekend usage was much higher

15-minute smart meter usage data can persuade customers that the root cause of a high bill isn't a smart meter, but mistimed or malfunctioning electric appliances.

than weekday usage. Due to the smart meter issues in California, the customer felt NV Energy's smart meter was billing them incorrectly. We reviewed the account and it became clear that something was happening on the weekends, but happening consistently. The account was for a condominium, which meant that

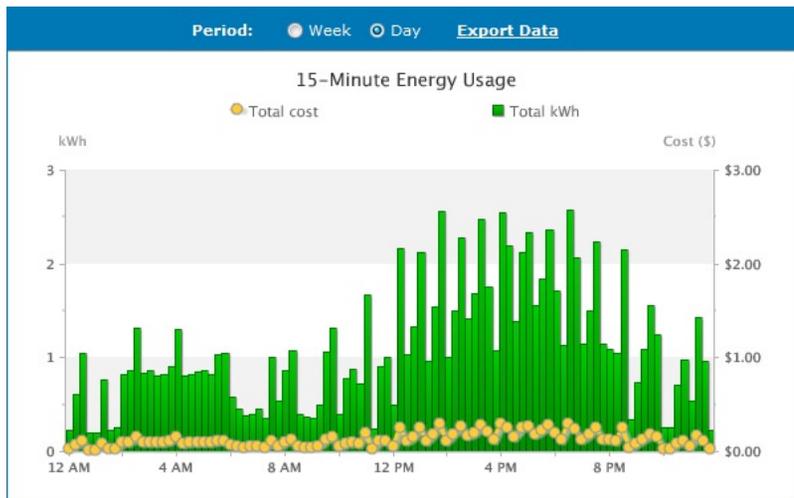
the typical causes, like pool pumps, didn't apply. Our expert analysts pointed out that due to the consistency of the usage it was most likely due to a programmable thermostat that had different settings for weekdays versus the weekends.

I contacted the customer to acknowledge receipt of their letter and offered to help them with their concerns. I explained that although I could only speculate on the cause of the higher weekend usage, I thought we had some good ideas on what it could be. The customer was very friendly and appreciative of the response and asked for our insight. We explained that a programmable thermostat might be the cause. The customer

thought about it for a few minutes and agreed that it could be the cause. The customer would ask a neighbor to check it out. After not hearing back from the customer for awhile, I checked their daily usage charts for the week following our last call. The data showed an immediate change, a reduction in weekend usage. It appears that the usage information helped raise the customer's awareness, helped us determine the cause of the increase, and helped the customer make a change that reduced their bill.

Story 3

A customer called in to discuss the rise with his usage ever since he had the new meter installed on his home. He wasn't yelling or screaming at all. He simply wanted to know what was causing his bill to go up. I went over a checklist with the customer to find out if anything at all had changed in his home since the new meter had been installed. And after going through the checklist the customer explained to me that he had a new pool pump installed at the same time the meter was installed. So in the customer's mind he was thinking everything should be fine. I explained to the customer that I was able to see the amount of usage he was using and the time he had spikes in his usage. I told the customer whatever was causing the spikes on his usage was on a timer and it came on every day at the same time. So the customer was willing to do some adjusting to his pool pump timer because he said it was coming on at the wrong time. I explained to him since we had the new meter installed on his home this was the only way for us to really know what was going on at his home. If we had had



15-minute smart meter usage data can help resolve high bill complaints quickly.

the old meter we may have never known that his pool pump timer was wrong. I also sent him a picture of his graph to show him the difference from what he was using to what he is using now. He was so excited that we had these new tools to assist him with his problem. His wife related to us that her husband wanted to call me every other day to find out how he was doing with the usage now. The customer was happy to know that it was not the meter. It was something he could actually fix on his own.

Reactive versus Proactive

Each of the previous stories describes a reactive approach to addressing customer issues and problems. What about proactive approaches, where you contact customers about an issue before the customer realizes they have an issue?

In addition to 90-60-30, SDG&E also has its Proactive, Mutually Beneficial, and Collaborative (PMC) principles for customer experience design. Guided by PMC principles, SDG&E developed a proactive process to identify high bills due to slow or stuck

mechanical meters. After a smart meter was installed and before the first smart meter bill was mailed to the customer, SDG&E:

1. Collected seven days of smart meter data.
2. Calculated the kWh per day recorded by the smart meter (SM1).
3. Calculated the kWh per day recorded by the mechanical meter the prior month (MM1).
4. Calculated the kWh per day recorded by the mechanical meter the same month, prior year (MM2).
5. Evaluated the difference using three tests that generate two scores:

IF	THEN
SCORE 1	
$(SM1 - MM1) > 195\%$	Possible slow or stuck meter.
$(SM1 - MM1) < 60\%$	Smart meter recording less usage.
SCORE 2	
$(MM1 - MM2)/(SM1 - MM1) > 150\%$	Smart meter recording more usage.

If either Score 1 or Score 2 was positive, SDG&E conducted further investigation of meter data and functionality of the smart meter. If the results suggested a problem with either the mechanical meter or the smart meter, SDG&E proactively contacted the customer, explained the situation, and made any meter changes as required. A total of 608 residential customers were contacted. Customer response to this proactive outreach was very positive.

+ 35 Days: Provide Online Tools

We have finally reached the moment you (and your customers) have been waiting for. The day when all quality gates are passed, a switch is flipped, and the customer can finally see for themselves what all the fuss has been about: Bill-to-date. Projected bill. 15-minute smart meter usage graphs. Bill alerts. And that is just the beginning.

"We already have the smart meter and love it. I can go online each day and check my electric bill and know how to watch my costs. As others have posted, we have been able to lower our usage by knowing the hourly usage." – online comment posted by vegaslee on the Las Vegas Sun website, October 25, 2011.



Bill-to-date and projected bill as displayed on the NV Energy My Account dashboard.

Your delivery of online tools to customers (and call center representatives) must be executed flawlessly. One-third of your customers still "don't know" whether smart metering will be accurate, private, secure, safe, and valuable. Imagine what will happen to their confidence if the online tools don't work or display incorrect information. Here is how to execute flawlessly.

1. Prepared, Not Surprised

You cannot tell your call center about the online tools the day before you release the online tools to customers. That would be a surprise, and a bad one at that. Product releases must be well-orchestrated, with each internal stakeholder indicating that their part of the organization is prepared to deliver their contribution to the agreed-upon standard.

To prepare for the release of the online tools, NV Energy developed and delivered three hours of classroom training to its customer service representatives. The training included an online learning module that demonstrated the online tools, which was then used to train employees in departments other than the call center.

2. Correct, Not Quick

Correct not quick means that you favor quality over speed. For customers to have confidence your solutions have to work flawlessly. This is why we advocate waiting 35 days after meter installation before releasing the tools to customers. During this

Account Alert: Threshold Exceeded

Account Number: 30-*****-***1805
 Meter Number: 551122
 Service Address: 1 Main St Apt A

Dear Kristen Hawkins:

As of July 26, 2010, your account has exceeded the usage threshold of 200 kWh established for your electric service.

• Cost-to-date:	\$27.00
• Number of days into your billing cycle:	25
• Usage to date:	216 kWh

For more account information, to find tips on lowering your bills, to make an online payment or modify your alerts, go to MyAccount at <http://www.nvenergy.com/>.

A Bill Alert email message notifying the customer that usage exceeded a threshold.

time you must conduct a variety of tests to “certify” the smart meter. These tests ensure that meter data is flowing, the billing process is working, and that the utility can present an accurate bill to the customer.

We suggest that you have *friendlies* (employees, family, and friends) be the first ones to formally test the online smart meter tools. NV Energy asked employees to participate in its tests. Employees were asked to:

- Complete a pre survey regarding their expectations before starting the test.
- Perform a task that they could complete with the online tools in less than 10 minutes.
- Provide the results of the task (so we could verify task success).
- Complete a post survey regarding their actual experiences.

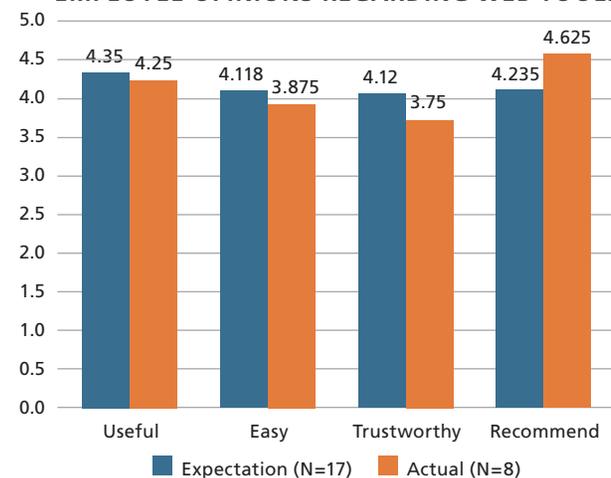
The results indicated that there were some issues with usefulness, ease-of-use, and information trustworthiness, but even with those issues employees were willing to strongly recommend the online tools to family, friends, and neighbors.

3. Soft, Not Hard

This principle is borrowed from the retail store industry. A “hard” opening is the prototypical grand opening of a store, where on the first day there are balloons, bands, and a host of other celebratory activities. A “soft” opening, on the other hand, is where you quietly open the store’s doors, see who wanders in, and slowly ramp up your resources to support an increasing flow of customers.

NV Energy chose the “soft” opening for its online tools. One day in July, 2011, online tools were turned on for 30,000 customers. Customers weren’t told. And each subsequent day online tools were turned on for more customers. After two weeks nearly 6,000 customers had accessed the tools (based upon log-ins and click-through counts) and traffic into the call center was minimal. Three months later notification communication was modified to generate awareness of the tools and as of November, 2011, over 500,000 customers were able to access the online tools.

EMPLOYEE OPINIONS REGARDING WEB TOOLS



Employee expectations and actual experience with the online tools.

About the Ideas in the Handbook

You can be confident that the ideas and approaches discussed in this Handbook were developed using good design practices and tested in both focus group and field settings. Here are the primary principles and practices that guided our efforts.

Customers as Co-Creators of Value

Customers should be viewed as co-creators of value. This means that customers who are knowledgeable and who have the right tools will be the ones to unlock the value that smart metering systems possess. For more information, see:

- Honebein, P.C. (1997). *Strategies for Effective Customer Education*. Chicago: NTC Books.
- Honebein, P.C. & Cammarano, R.F. (2005). *Creating Do-It-Yourself Customers*. Natorp, OH: Texere.
- Lusch, R.F. & Vargo, S.L. (2006). *The Service Dominant Logic of Marketing*. Armonk, NY: M.E. Sharpe.

Customer-Centered Design

Solutions should be designed from the perspective of the customer. To do this, one starts by conducting qualitative research that elicits what customers want from the customer experience. Those requirements are then translated into

customer experience blueprints – flowcharts that depict how customers and the utility accomplish customer goals.

Finally, the customer experience is constructed using storyboards and prototypes. These artifacts enable one to collect customer feedback and refine the design. For more information, see:

- Norman, D.A. (2004). *Emotional Design*. New York: Basic Books.
- Pine, J.B. & Gilmore, J.H. (1999). *The Experience Economy*. Boston: Harvard Business School Press.
- Shostack, G.L. (1984). "Designing Services That Deliver." *Harvard Business Review*, January-February, 132-139.
- Ulwick, A.W. (2005). *What Customers Want*. New York: McGraw-Hill.
- Warfel, T.Z. (2009). *Prototyping: A Practitioner's Guide*. New York: Rosenfeld Media.

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